697.93
Powers

THE POWERS REGULATOR COMPANY

MANUFACTURERS OF

Automatic Temperature Controlling Apparatus

NEW YORK CHICAGO
PHILADELPHIA BOSTON

THE POWERS SYSTEM OF AUTOMATIC TEMPERATURE CONTROL

A NON-ELECTRIC, AUTOMATIC REGULATOR FOR CONTROLLING TEMPERATURES

UNITED STATES PATENTS
SEPTEMBER 10, 1889
DECEMBER 10, 1889
FEBRUARY 11. 1896
MARCH 3, 1896
APRIL 21, 1896

1901

MANUFACTURED BY

THE POWERS REGULATOR COMPANY
40 DEARBORN STREET, CHICAGO, ILL.
Long Distance Telephone, Central 271

111 Fifth Avenue, New York
922 Real Estate Trust Bldg., Philadelphia
224 Franklin Street, Boston

3-1-01

Automatic Regulation of Temperature in Schools, Public and Office Buildings, Residences and Railway Cars

Uniformity of temperature in heated apartments is everywhere being recognized as of the utmost importance, and in the construction of modern buildings much attention is being given to this subject. In offices much more can be accomplished under proper temperature conditions, and with less fatigue and discomfort. In schools, no teacher or pupil can do good work in an irregularly heated room, and the foundation for permanent ill health has often been laid in a cold taken during childhood in the school room from a quickly changing temperature, usually occasioned by opening windows to cool off when overheated.

Where the control of temperature is left to the teacher, uniformity cannot be expected. When busily occupied with a class, the extremes only force themselves on the notice, and the result is a constantly changing temperature—first too warm, and then too cold.

Again, it is well known that a teacher's feelings are but a poor index of what the temperature actually is, as they are affected by the mental and physical condition so that, nervous and excited over the trials incident to their work, they often imagine the room overheated when it is not; and the knowledge of the fact that the temperature is variable, contributes to these errors of imagination.

Where the temperature is controlled by an Automatic Regulator it becomes a settled fact in the mind of the teacher that the temperature is fixed, and much of the nervous and imaginary trouble is avoided, and more and better work can be done. In school rooms, crowded as they usually are, the teachers have enough to do without watching and attempting to control the temperature. They should be relieved of this care, and at the same time insured uniformity with plenty of pure air.

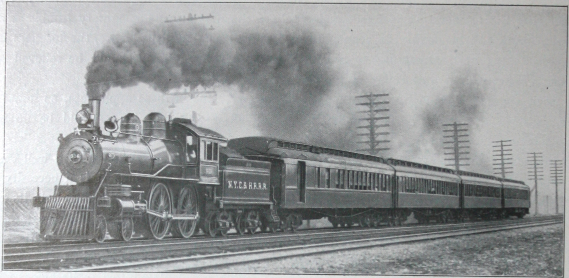
This work should be done by an Automatic Regulator, and as these appliances, as now made by us, have reached such a degree of perfection as to insure definite results, there should be no hesitation in adopting them wherever needed.

An Automatic System of Regulation, properly constructed, in connection with a well designed heating plant, will never fail to give complete satisfaction, and in large buildings it is a necessity if anything like uniformity of temperature is expected. The "Automatic" never forgets nor neglects its work. It is always on duty and the result is perfect regulation and a great saving of fuel.

It is equally important in office and apartment buildings, hotels, schools and in the home. Two results are secured—first, comfort and health for the occupants;—second, economy in fuel.

An office or apartment building is an investment which is calculated to pay its owner a certain rate of interest, and anything that goes into such a building and earns a fair rate of interest upon its cost, adds to the desirability of the entire investment. It is an impossibility for an engineer to so govern his heating apparatus as to give sufficient heat to every tenant in the building without overheating a great many rooms. A system of regulation applied to all of the rooms makes it certain that none of them will be overheated, and therefore no more fuel used than is absolutely necessary to properly warm the structure. The resultant saving will be from 15 to 20 per cent. and in some cases more. It is evident that this is no inconsiderable item in the expense of running a large building through the heating season.

These facts have become so generally recognized that progressive architects are specifying temperature regulation in a great majority of our modern buildings.



RAILWAY CAR TEMPERATURE

The Powers System of Automatic Temperature Control is being installed in railway cars, both coaches and sleepers, whether heated by steam from the engine or by coal-burning heaters. The apparatus is so simple in construction and so durable, as to admit of effective work in this field, where other appliances have failed by reason of their inability to stand rough usage. We have a separate catalogue showing the application of our appliances to railway work. This will be sent upon application.

The progressive roads of the country are using the Powers System of Heat Regulation in their best trains. Among them we invite reference to the following:

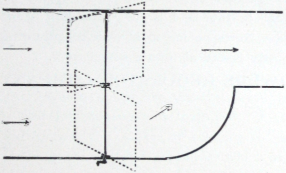
NEW YORK CENTRAL
BOSTON & ALBANY

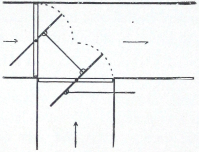
CHICAGO & NORTH-WESTERN
CHICAGO, MILWAUKEE & ST. PAUL
CHICAGO TERMINAL TRANSFER COMPANY

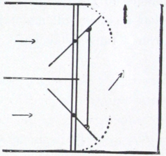
LAKE SHORE & MICHIGAN SOUTHERN
CANADIAN PACIFIC

THE POWERS SYSTEM OF TEMPERATURE REGULATION FOR HOT BLAST HEATING AND VENTILATING WORK

In the next following pages we show the Powers System of Temperature Regulation in its application to hot blast heating and ventilating work. In this system of heating the flues or ducts are usually divided into pairs, one division carrying hot air and the other cold or tempered air. Dampers are placed in these ducts, and so handled by our apparatus as to mix the currents of hot and cold air, bringing them into the rooms at a temperature suitable for maintaining the desired degree of heat.







The above cuts show different arrangements of these ducts and the dampers which control the mixing of the air currents, the lower duct in each case carrying cold air, and the upper warm air; the two currents mixing in the proper proportions beyond the dampers. The best results are unquestionably secured by the regulating apparatus that will operate these dampers in such a way as to secure a steady flow of properly heated air into the rooms.

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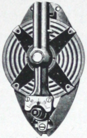
The dampers should not alternate in their position, but when the room temperature has reached the desired point should be *automatically held in such a position as will mix the hot and cold air currents*, bringing them into the rooms in the proportions required to *maintain* the desired temperature. It is obvious that any regulating system that alternately opens and closes these dampers with no intermediate position will deliver the air into the rooms in a succession of hot and cold blasts, a condition of things by no means adapted to the comfort and health of the occupants.

We are the inventors of this method by which mixing dampers in Fan Heating Systems are operated with a *graduated motion*. Vigorous opposition and condemnation of this principle on the part of our competitors, has given way, in response to the demand of the public, to final acquiescence in the method, and has resulted in the bringing out by them of a series of imitative devices designed to accomplish the purpose. While we fully appreciate the forced compliment implied in this imitation of our inventions, we wish the public to keep in mind that the Powers system as the "original" in this field is the **"Standard"**, and that no other will maintain dampers in different intermediate positions corresponding to different temperatures, over a range sufficiently wide to insure a uniform delivery of properly heated air into a school room.

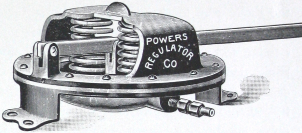
THE POWERS REGULATOR COMPANY

THERMOSTAT AND DIAPHRAGM USED WITH THE FAN SYSTEM OF HEATING

Cover



Thermostat



Operating Diaphragm

We show here the thermostat and diaphragm used with the Fan System of Heating. The thermostat is located in the room to be controlled. It operates on the vapor principle (P. 17), peculiar to all of our apparatus, and controls the passage of a supply of compressed air to the diaphragm, the latter being in proximity to and connecting with the dampers which are to be operated. The compressed air is obtained by means of a suitable compressor, which may be either steam or hydraulic, and is usually located in the basement, a storage tank or reservoir being provided, and a constant pressure of 15 pounds being automatically maintained therein. The pump is governed automatically and runs only when necessary to maintain the desired pressure. The building is piped in such a manner as to bring the air to each thermostat, and a single tube is run from the thermostat to the diaphragm which is to be operated. The air piping is of galvanized iron, and in the extensions, of armored lead tubing ; the armoring consisting of galvanized steel wire closely wrapped about the pipe and enclosing longitudinal wires, making a very strong and durable pipe. The operation is as follows: Supposing the thermostat to be set for 70 degrees temperature, and that temperature to exist in the room, the thermostat will have allowed a certain quantity of air to pass into the diaphragm and under such a pressure as will bring the dampers into a position that will admit a mixture of the hot and cold air from the blast chamber in such a proportion as will maintain this temperature of 70 degrees in the room. If now, through a change in the weather conditions or from some other cause, the temperature in the room were to rise a degree, the thermostat will respond immediately to this change of temperature and cause a corresponding increase of air pressure in the diaphragm. This results in a movement of the dampers tending to change the proportions of hot and cold air, decreasing the former and increasing the latter, this being done to just such an extent as will counteract the upward tendency of the room temperature. The desired temperature then being restored, the dampers come to a balance in such a position as will maintain it. Should the temperature fall in the room where the thermostat is located, the operation is precisely the same, except in a reverse manner, the springs in the diaphragm exerting a force to bring the dampers back to the position due to the lowered temperature.

☞ **With the Powers System of Regulation the dampers will TAKE AND MAINTAIN intermediate or mixing positions, corresponding to the temperature requirement of the rooms, and in that way the alternating blasts of hot and cold air, so objectionable in all other systems, are avoided.**

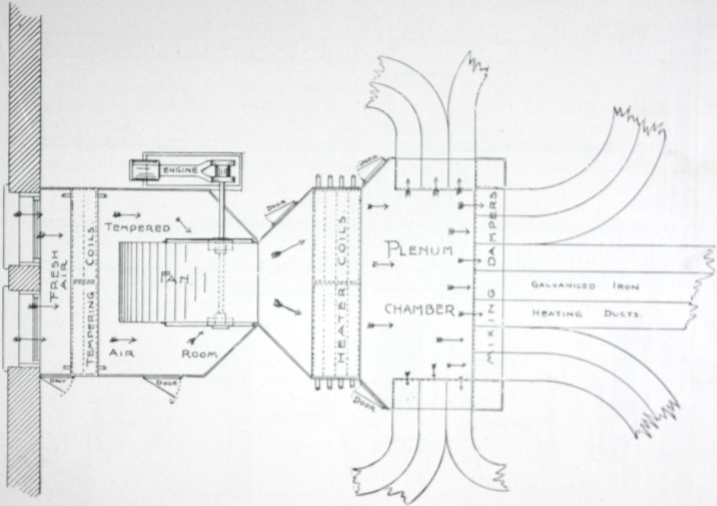


Plate 1.—Plan View, Steam Fan System of Heating—Central Plenum Chamber.

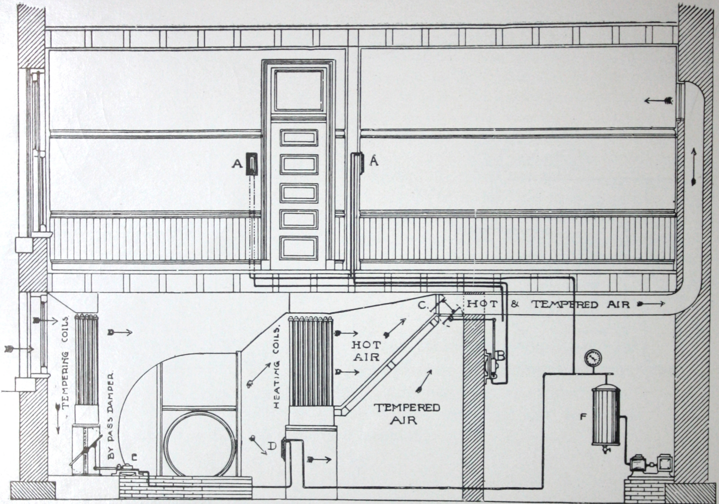


Plate 2.—An Elevation of System Shown in Plate 1.

Plate 1 is a plan view and 2 an elevation showing a type of the Steam Fan System of heating, commonly used in school houses. Plate 2 shows particularly the application of the automatic temperature controlling system.

A is the thermostat which controls the compressed air generated at F, and operating the diaphragm B; this being connected to the mixing dampers C, holds them in such a position as will properly mix the hot and tempered air **before** it enters the room. It will be noted that the cold air from out of doors is first drawn through tempering or pre-heating coils, and by them is warmed to a temperature not higher than 60 degrees, the thermostat D in tempered air chambers operating the by-pass damper, beneath tempering coil, so as to prevent the overheating of this air. The arrangement of thermostat, diaphragm and mixing dampers is repeated for as many rooms as there are under control—each room having its own thermostat, mixing dampers and heating duct. The compressed air from the reservoir F being supplied to all thermostats through a suitable arrangement of piping.

Plate 3 on the following page shows in elevation another arrangement of Steam Fan System, where the mixing dampers are located at the base of the heat flues, the application of the controlling system being, however, practically the same.

It is obvious that heating systems may differ very much in their construction. The heating surface, for instance, may be divided, and heating coils located at the base of each flue. The Automatic Regulation may be applied to any of the various heating systems in use, the only requirement being an arrangement that will permit the placing of dampers or valves so that they will control individually the heat supply of the rooms.

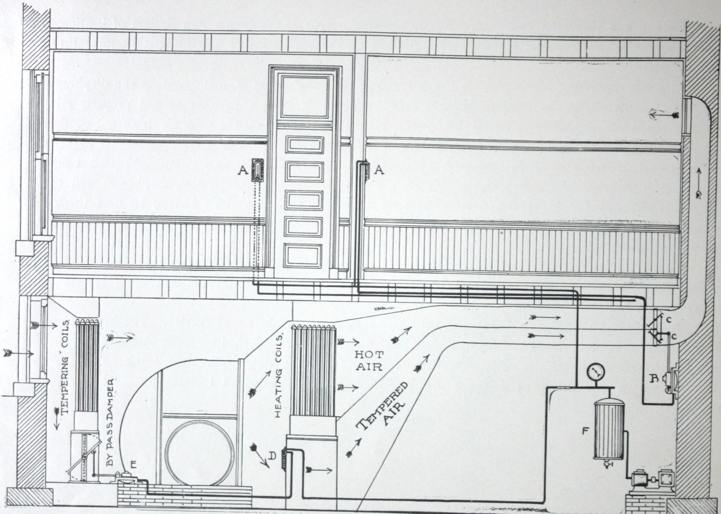


Plate 3.—Steam Fan System in Elevation.

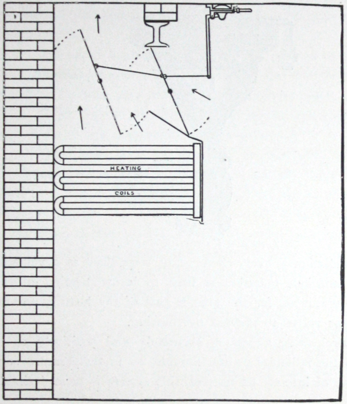
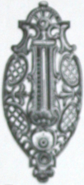


Plate 4.

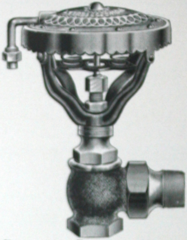
Plate 4 shows an arrangement of dampers commonly used in indirect heating, or, more properly speaking, those systems of heating where the coils are located at the base of the flue; each room as a rule having its own flue and heating coil. The dampers control the passage of the air, allowing it to pass through the heating coils or over them. These dampers, as shown in the cut, are closed entirely against the cold air, and consequently are allowing heated air only to pass into the room. They swing over the course indicated by the dotted lines, and when at the other extreme will allow cold air only to enter the room. When these dampers are held at an intermediate position by the regulating apparatus, they cause the hot and cold air to mix and enter the room at the proper temperature. The two dampers are linked together by a connecting rod, and are actuated by another rod, which connects with the lever of the diaphragm, which in this cut is shown attached to the ceiling. The balance of the regulating apparatus may be the same as that shown in plates 2 and 3.

THE POWERS SYSTEM OF TEMPERATURE REGULATION

AS APPLIED TO LOW PRESSURE STEAM AND THE CONTROL OF DIRECT RADIATION



THERMOSTAT.



DIAPHRAGM RADIATOR VALVE.

The automatic control of steam and hot water radiation is everywhere being recognized as a valuable feature in the equipment of modern buildings. If sufficient radiation is used to insure heating in the coldest weather, it will prove to be in excess of the requirements for the greater part of the heating season, thus necessitating a constant manipulation of the radiator valves to prevent overheating.

A good system of automatic regulation will control these valves so accurately and positively as to relieve the occupant of the room from any attention to the radiators or any thought as to temperature conditions. As an investment calculated to pay a high rate of interest on its cost, this system is most desirable in any building.

We show above, cuts of the two principal parts of the Powers apparatus, the thermostat and valve. The thermostat is shown with one style of cover of ornamental pattern; it is handsomely plated, and provided with a reliable thermometer, and a means of adjusting to secure any desired temperature. This adjustment is made with a key, and can only be changed by the person having the key.

The valves are made in all standard sizes and patterns, either plain or nickel-plated, with plain or ornamental diaphragms of suitable finish. Special plating of both valve and thermostat can be furnished when desired.

Air under a pressure of 15 pounds is used to operate the system. This air is pumped into a reservoir by a suitable air compressor, and from there distributed to the thermostats in the building through a system of piping; a tube also leading from each thermostat to the radiator valve which is to be controlled.

When two or more valves are to be operated by one thermostat, the tubing is branched so as to supply air to the diaphragm of each valve.

The thermostats are operated on the well-known vapor principle peculiar to all of our temperature regulators. Within the thermostat is an air valve adapted to be opened or closed with the temperature variations and controlling the passage of air to the radiator valves. By a simple mechanism, a positive operation of the radiator valve is secured, it being at all times either entirely open or firmly closed. This is necessary in the control of steam in order that no water may accumulate in the radiators. (If the heating system used be hot water, this feature is dispensed with and the valves are operated with a graduated movement, this being best adapted to the control of hot water circulation.)

Plate 5, following page, shows the arrangement of thermostat, diaphragm valves and air piping used for the control of direct radiation—A being the thermostat, B, C and D radiator valves under its control. The radiator shown in the center being on a **two pipe** steam system, requires two diaphragm valves, one on the supply and one on the return. The other radiator is shown as connected to a **one pipe** system. Such a system requires one valve only for each radiator, the steam entering the radiator, and the condensation returning through this valve.

A number of radiators may be placed under the control of one thermostat, and all of the valves will be operated simultaneously—each room, however, must be supplied with a thermostat.

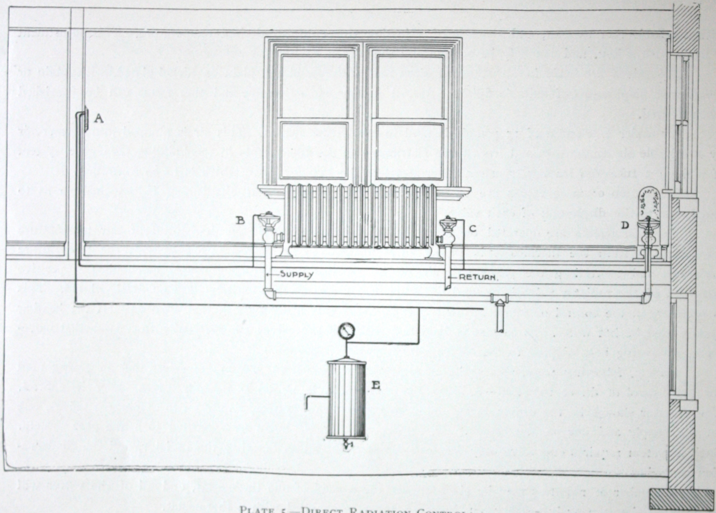
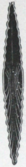
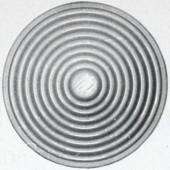


PLATE 5.—DIRECT RADIATION CONTROL.





THE THERMOSTATIC DISC

is the basis of all the apparatus used in the Powers System of Automatic Temperature Control. This disc, as will be seen by reference to the above illustrations, is composed of two circular plates of metal; these plates being spun in corrugations to give flexibility, the edges being united and sealed so as to form a hollow disc. In this disc is confined a certain quantity of a volatile fluid whose boiling point is at a temperature somewhat below the operating point of the thermostat. This fluid has a fixed boiling point which never changes. The fluid used in the thermostats for control of temperatures in living rooms has a boiling point of 50 degrees Fahr., and whenever the disc is exposed to a temperature above 50 degrees, the liquid confined within vaporizes and generates a pressure which expands the disc, increasing its thickness, always in true proportion to the temperature to which it is exposed. The volatile fluid, being hermetically sealed in this disc, *will never lose its power or change in quality*. It will always produce the same pressure at any given temperature and will always expand the disc proportionately. The disc is made of such strength as will admit of exposure to a temperature of 120 degrees, this being, of course, greatly in excess of the amount of heat that would ever be applied to it in use. The pressure derived from the volatilization or boiling of this volatile fluid amounts to four pounds to the square inch at 70 degrees, and there is a definite and positive increase of pressure for each additional degree or fraction of a degree of heat applied to the disc. It will thus be seen that the power secured from this disc is ample to operate *directly* the valves which control the passage of the compressed air, and for this reason we do not find it necessary to use power multiplying devices, which add so much to the complication of other thermostats on the market.

THE MARKED SIMPLICITY
OF OUR APPARATUS
WILL COMMEND IT TO ALL

No electricity is used with our system, and we are able to dispense with all the complicated mechanism which has heretofore been found necessary to the automatic control of temperature. There are but five working parts in the thermostat and diaphragm combined, and they are so simple in construction and positive in operation that the liability of derangement is reduced to a minimum.

There are no restricted air passages requiring fine adjustment, with consequent liability of stoppage from dirt accumulation. There are **no delicate levers, springs and valves** exposed to the dust and dampness of the atmosphere. The thermostat has but two valves, and they are in a sealed compartment, where nothing but filtered air can reach them.

If any architects or heating engineers are prejudiced against automatic regulation in its application to large office and apartment buildings, by reason of the complicated and unreliable devices which have heretofore occupied this field, we ask of them **a careful investigation** into the merits of our system, being confident that we have devices which, by reason of their simplicity and effectiveness, will meet with approval.

WE received the HIGHEST PRIZE given at the Paris Exposition for AUTOMATIC TEMPERATURE CONTROLLING APPARATUS

THE POWERS REGULATOR COMPANY

CHICAGO NEW YORK PHILADELPHIA BOSTON

SOME PUBLIC, OFFICE AND MANUFACTURING BUILDINGS

....IN WHICH THE....

POWERS SYSTEM OF TEMPERATURE REGULATION

HAS BEEN ADOPTED.

JANUARY 1, 1901.

CONNECTICUT

Hartford

Brown School Annex
High School

New Haven

State Normal School
Elizabeth Cheever School
Worthington Hooker School

DISTRICT OF COLUMBIA

Washington

Girls' Western High School
U. S. Postoffice Building
Model Basin Building,
U. S. Navy Yard.
Hearst School

ILLINOIS

Aurora

High School

Chicago

W. H. Ray School
David Swing School
Bridewell School
Perkins Bass School
Tennyson School
Green School
Healey School
West Division High School
Newberry School
Gresham School
Von Humboldt School
Walter Scott School
Adams School
Bismarck School
Morris School
Richard Yates School
D. S. Wentworth School
Nash School
Nixon School
Burley School
Scanlan School
Thorpe School
McLellan School
Ward School
Bealle School
Bryant School
Gallistel School
Willard School
Fallon School
La Fayette School
Lake View High School

Chicago—continued

Alcott School
W. S. Schley School
John Worthy School
Jno. B. Drake School
Charles Darwin School
Hendricks School
Oak Ridge School
Myra Bradwell School
Herman Felsenthal School
Carter H. Harrison School
Elsdon School
Selwyn Ave. School
Oliver Goldsmith School
Lewis Institute
Fullerton Hall (Art Institute)
Ryerson Library " "
First National Bank
Rector's Restaurant
New York Life Building
Quincy Restaurant
Fine Arts Building
St. Caroline Turkish and Russian Baths
Chicago Telephone Building
Ferron & Ballou Co.
McCormick Harvesting Machine Offices
McCormick Buildings
Marshall Field & Co., Offices
Woman's Athletic Club
Montgomery Ward Building
Chicago Edison Co.
Swift & Co., General Offices
Monroe Telephone Exchange
Merchants Loan & Trust Building
Telephone Building, Chicago Ave.
Swift & Co., Restaurant
Western Electric Co., Offices
Chicago National Bank

Elgin

Kimball St. School

Evanston

DISTRICT NO. 1

Emerson St. School
Hinman Ave. School

DISTRICT NO. 2

Central School
Lincoln School
Washington School

Feehanville

St. Mary's Training School

Glencoe

School

Harvey

Thornton Township High School

Hinsdale

District No. 1 School

Highland Park

Deerfield Township High School

Joliet

Eastern Ave. School
High School

Kankakee

Steuben School

La Grange

Lyons Township High School

Morgan Park

High School

Mt. Pulaski

High School

Oak Park

Congregational Church

Peoria

Bradley Polytechnic Institute

Riverside

High School

Urbana

Library Building, State University

Western Springs

School

Winnetka

New Trier Township High School

INDIANA

Elwood

High School

Evansville

Delaware School
Centennial School
Chandler School

Terre Haute

Allen School

IOWA

Council Bluffs

Beno & Co., Store

Davenport

School No. 12
School No. 13

Ida Grove

School

Mason City

Washington St. School

Odebolt

School

Ottumwa

High School

Sioux City

Sioux City Starch Co., Factory

MAINE

Hebron

Sturtevant Dormitory, Hebron Academy

Portland

Emerson Street School
Park Street School

Waterville

Colby University

Westbrook

School

MARYLAND

Baltimore

District No. 4, Primary School
District No. 7, Primary School

MASSACHUSETTS

Boston

Brighton High School
Longfellow School
Mary Hemenway School
Vernon Street School
Mayhew School
West Roxbury High School
Bolton Street School
Dudley Street Baptist Church
Paul Revere Hall
Masonic Temple
Estabrook & Co., Banking Offices
Adams House
New England Tel. & Tel. Building
Horticultural Hall
Hill Estate Building

Cambridge

Registry of Deeds Building
Y. M. C. A. Building
House of Correction

Hopedale

Grammar School

Lowell

Lowell State Normal School
Middlesex County Court House

Lynn

City Library

Malden

High School

Melrose
Melrose High School

New Bedford
Dunbar Street School
Phillips Avenue School

Northampton
High School

Palmer
School

Plymouth
Plymouth Cordage Co., Offices

South Framingham
State Normal School

Westfield
Normal Training School

Worcester
Worcester County Court House
South Side High School

MICHIGAN

Detroit
Van Dyke School
Central High School
Alger School
Campau School
Estabrook School
Garfield School
Harris School
Johnston School
Lyster School
Poe School
Rose School
Scripps School
Tilden School
Craft School
Western High School
Eastern High School
Masonic Temple
United States Capsule Co.
Berry Bros. Building

Lansing
City Hall

MINNESOTA

Winona
School

MISSOURI

St. Louis
Harrison School
Southern Hotel
New City Hall
Leggett & Myers Offices

NEBRASKA

Omaha
Saunders School
U. S. Postoffice and Custom House Building

South Omaha
School

NEW HAMPSHIRE

Manchester
High School

Nashua
First Congregational Church

NEW JERSEY

Farmingdale
Ditmar Powder Co.

Jersey City
Reed & Carnrick, Factory

Lakewood
George J. Gould Rink, Auditorium, Racquet and Tennis Court

Newark
Bergen Street School
Abington Avenue School
Sussex School
Hawthorne School
City Hospital
City Library

Trenton
Normal Training School

NEW YORK

Buffalo

- School No. 1
- School No. 28
- Tucker Hotel Building
- Buffalo Spring & Gear Co., Offices

Castleton

- Union Free School

Dannemora

- Insane Criminal Hospital

New York City

- School No. 88
- School No. 152
- School No. 119
- School No. 171
- Skin & Cancer Hospital
- St. Vincent's Hospital
- Kings County Hospital, Brooklyn
- Browning, King & Co., Offices
- New City Prison

Rome

- State Custodial Asylum

Syracuse

- Onandaga Co. Savings Bank Building
- Syracuse University Building

NORTH CAROLINA

South Rocky Mount

- W. & W. R. R. Hospital

OHIO

Cincinnati

- Union Trust Building

Cleveland

- Quincy School
- Wade Park School
- Lincoln High School
- East High School
- Harmon School
- Society of Savings Building

Columbus

- Townshend Hall, Ohio State University
- Peruna Drug Mfg. Co.

Toledo

- Lucas County Court House
- Lucas County Jail and Sheriff's Residence

OKLAHOMA TERRITORY

Alva

- Normal School

Stillwater

- Library Building

PENNSYLVANIA

Haverford

- Haverford College Gymnasium

Lancaster

- Lancaster Insane Asylum

Norristown

- High School

Philadelphia

- School, 15th and Norris Sts.
- Boys' High School
- School, 23rd and Lombard Sts.
- Northeast Grammar School
- Law School, University of Pennsylvania
- School, 16th and Porter Sts.
- School, Ontario and G. Sts.
- School, 8th and Fitzwater Sts.
- School, Carlisle and Race Sts.
- School, Oxford and 30th Sts.
- School, 13th and Thompson Sts.
- 22nd Section School
- Land Title & Trust Building
- Medico-Chirurgical Hospital
- United Gas Improvement Bldg.
- M. E. Home for the Aged
- Real Estate Trust and Hallowell Building

Philadelphia—continued

Link Belt Engineering Co.
St. Timothy's Hospital
United States Mint
John B. Stetson & Co., Drying Rooms
Wolff Process Leather Co., Drying Rooms

Waynesburg

School

York

York County Court House

RHODE ISLAND

Providence

Friends' School
Mathewson Church
Thayer Street School

VERMONT

Springfield

School

WEST VIRGINIA

Parkersburg

School

WISCONSIN

La Crosse

Redfield School
High School
Fifth Ward School

Madison

Hall, University of Wisconsin

Oshkosh

Diamond Match Co.

Portage

High School

Racine

3rd Ward School
4th Ward School
5th Ward School
6th Ward School

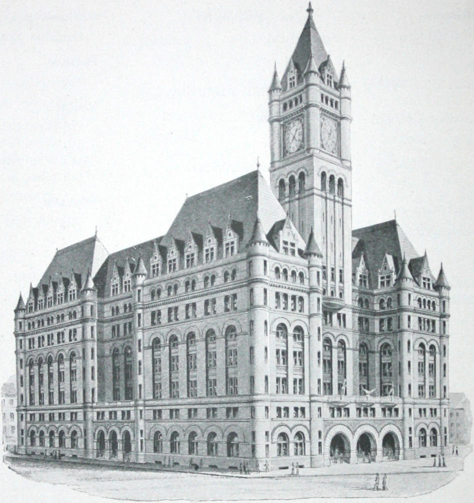
Wausau

High School

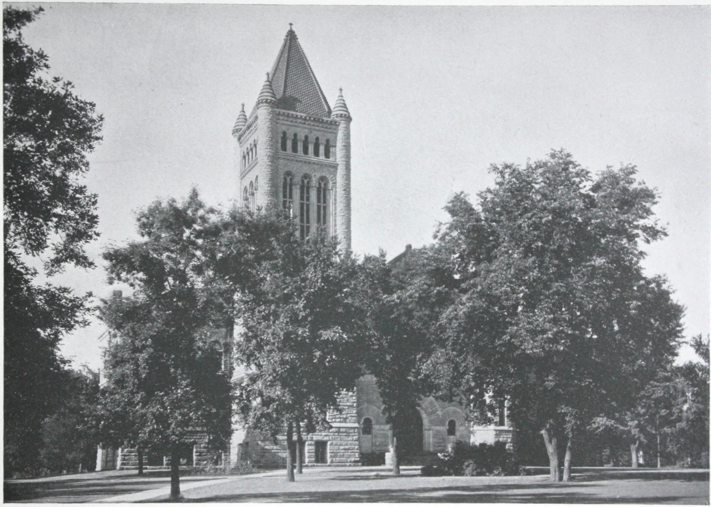
CANADA

Toronto, Ont.

Central Prison

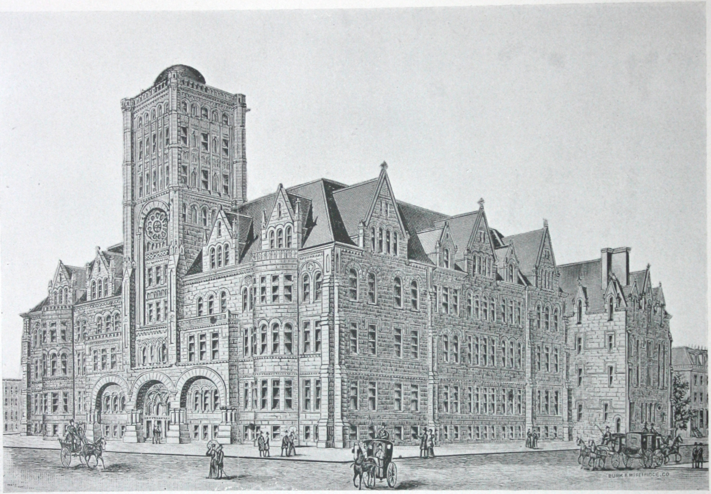


UNITED STATES POST-OFFICE BUILDING, WASHINGTON, D. C.

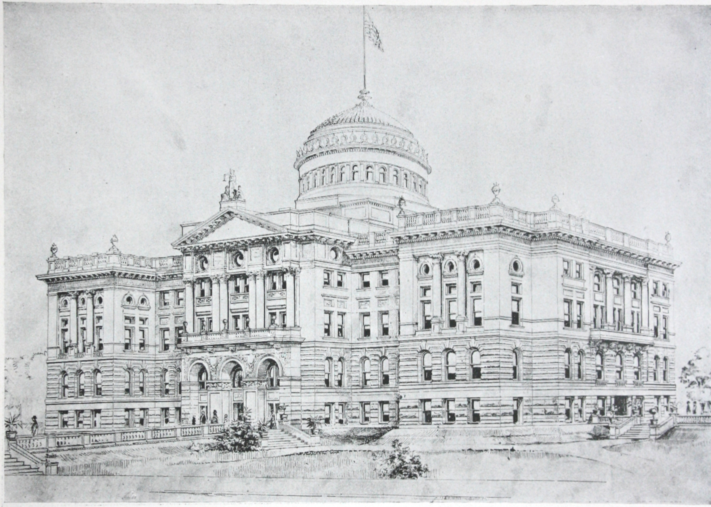


LIBRARY, UNIVERSITY OF ILLINOIS, URBANA, ILL.

RICKER & WHITE, ARCHITECTS

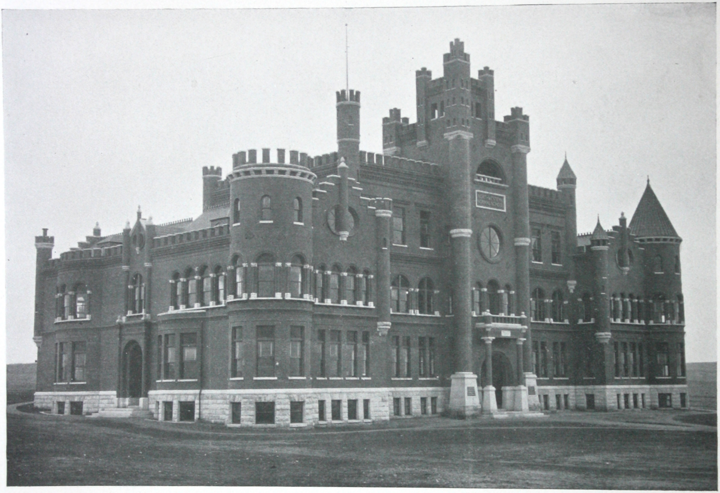


BOYS' HIGH SCHOOL, PHILADELPHIA, PA. JOSEPH W. ANSHUTZ, ARCHITECT

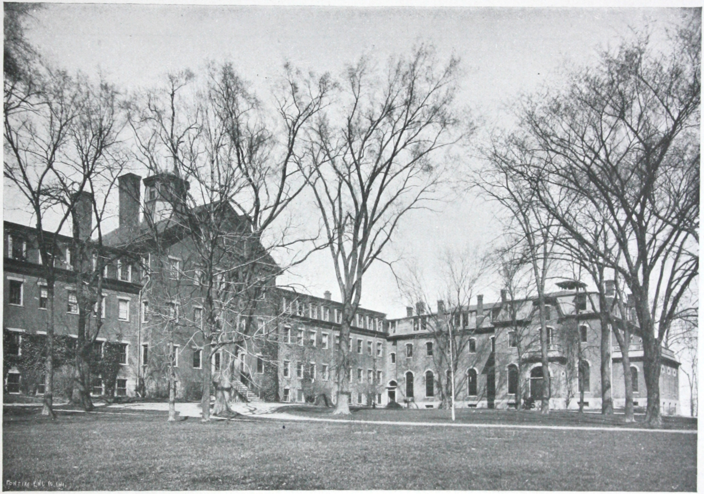


LUCAS COUNTY COURT HOUSE, TOLEDO, OHIO

DAVID L. STINE, ARCHITECT

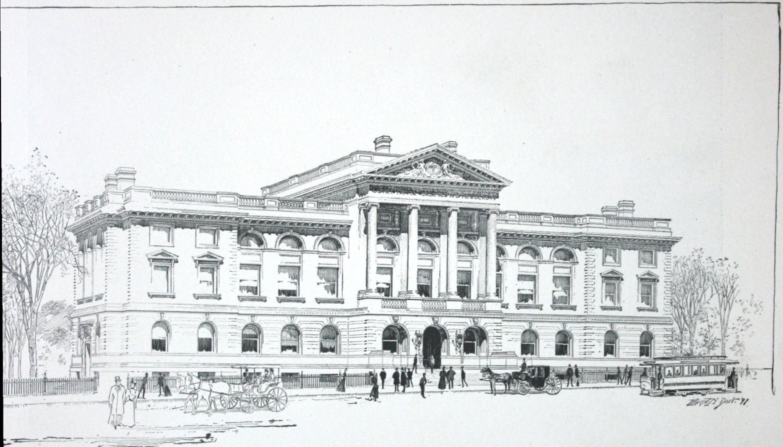


NORTHWESTERN TERRITORIAL NORMAL SCHOOL, ALVA, O. T. J. FOUCART, ARCHITECT

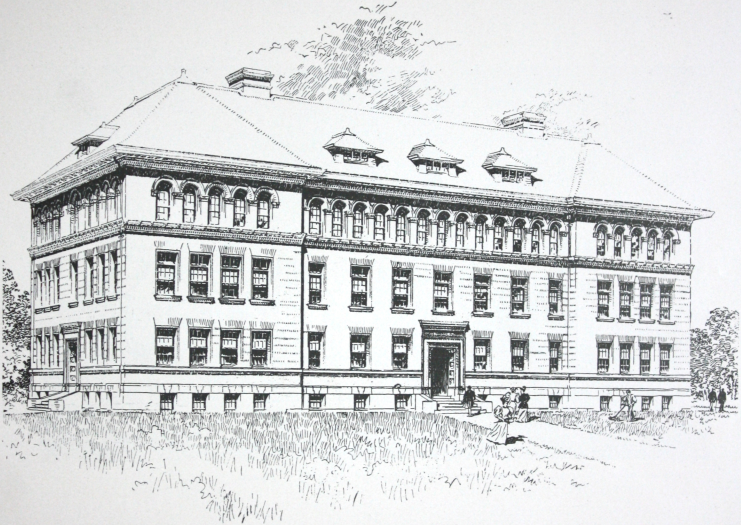


FRIENDS SCHOOL, PROVIDENCE, R. I.

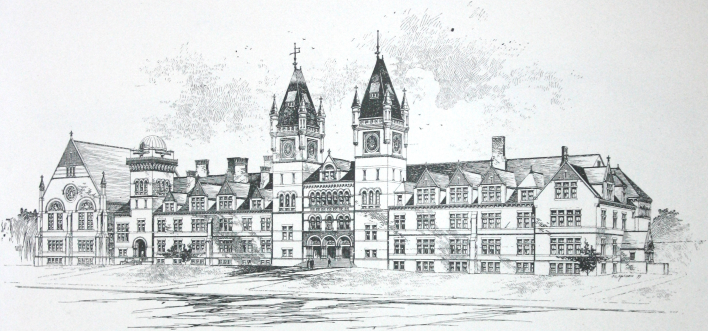
EDGAR B. PECK, ARCHITECT



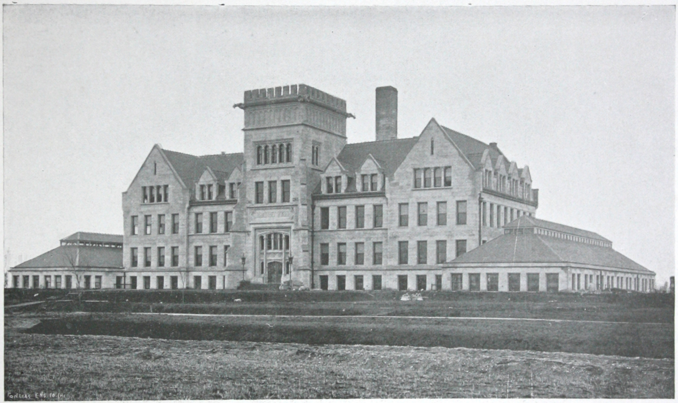
MIDDLESEX COUNTY COURT HOUSE, LOWELL, MASS. OLIN W. CUTLER, ARCHITECT



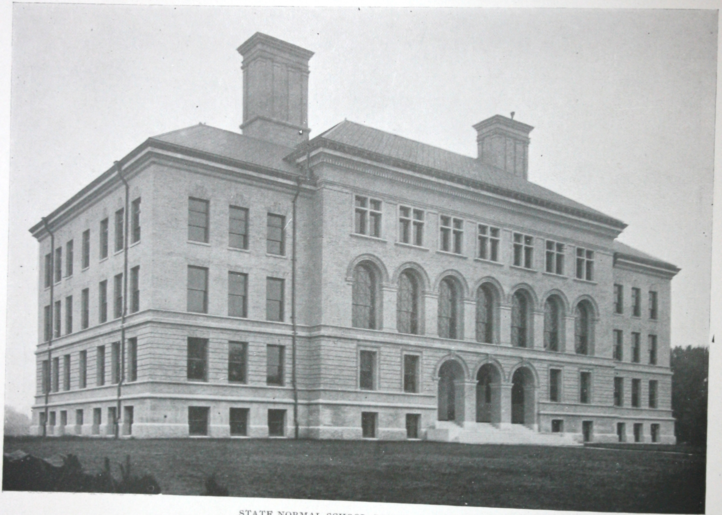
STATE NORMAL SCHOOL, NEW HAVEN, CONN. HARTWELL, RICHARDSON & DRIVER, ARCHITECTS



HIGH SCHOOL, HARTFORD, CONN. GEORGE KELLER, ARCHITECT

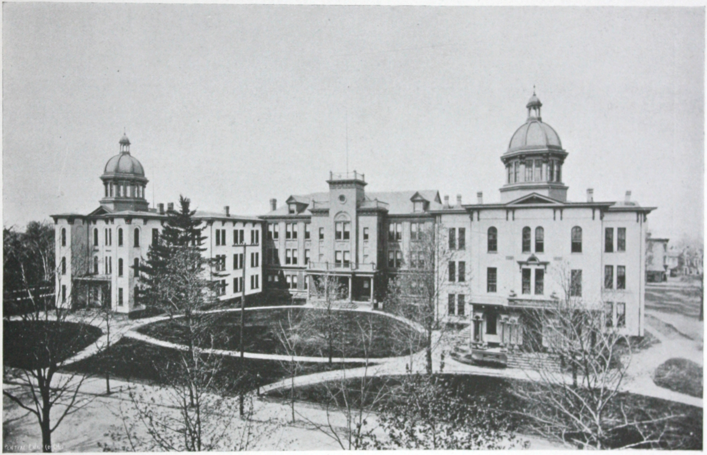


BRADLEY POLYTECHNIC INSTITUTE, PEORIA, ILL. HENRY IVES COBB, ARCHITECT

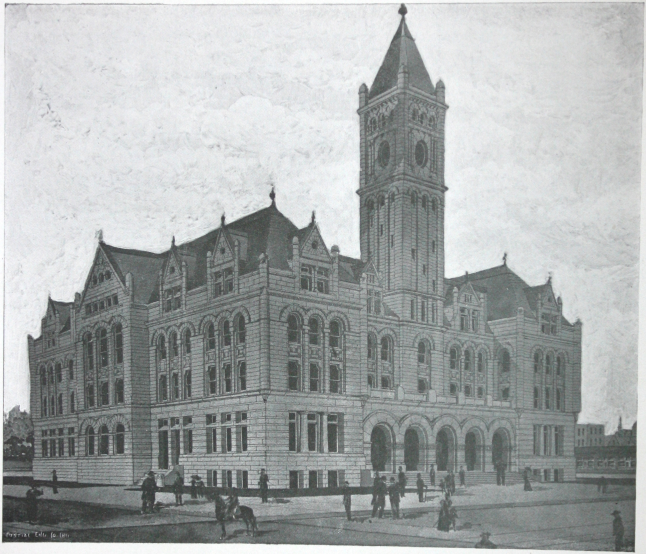


STATE NORMAL SCHOOL, LOWELL, MASS.

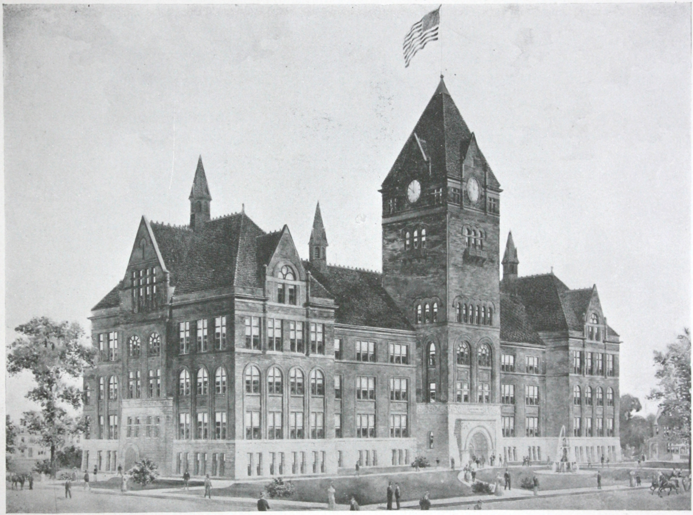
STICKNEY & AUSTIN, ARCHITECTS



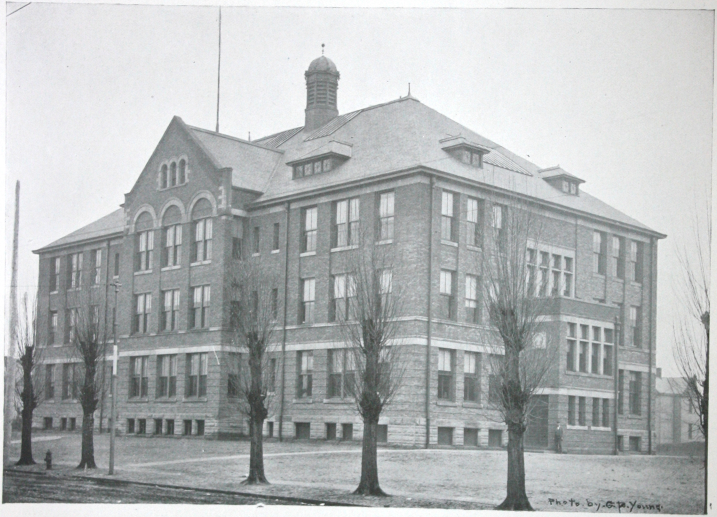
STATE NORMAL SCHOOL, TRENTON, N. J.



UNITED STATES POST-OFFICE BUILDING, OMAHA, NEB.

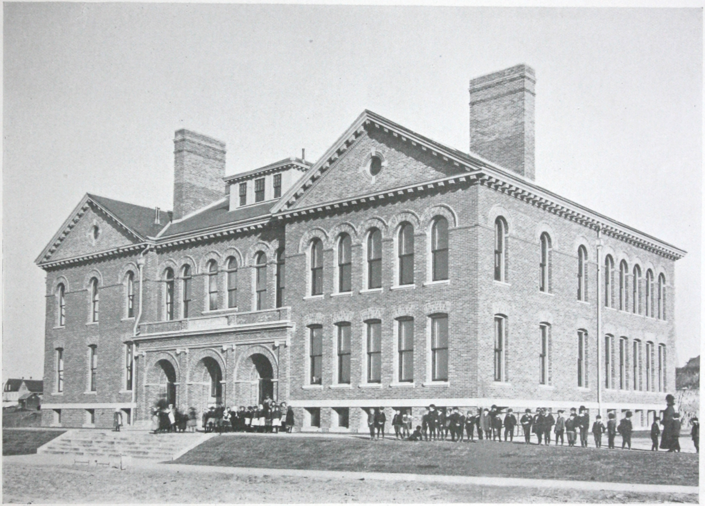


CENTRAL HIGH SCHOOL, DETROIT, MICH. MALCOMSON & HIGGINBOTHAM, ARCHITECTS



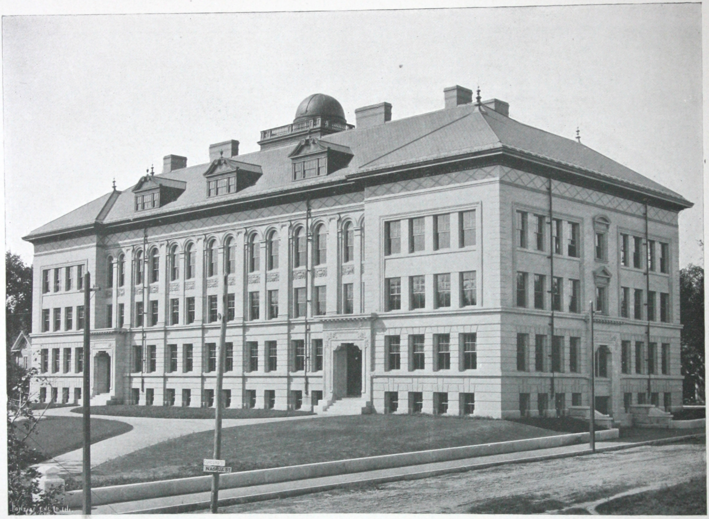
WADE PARK SCHOOL, CLEVELAND, OHIO

F. S. BARNUM, ARCHITECT

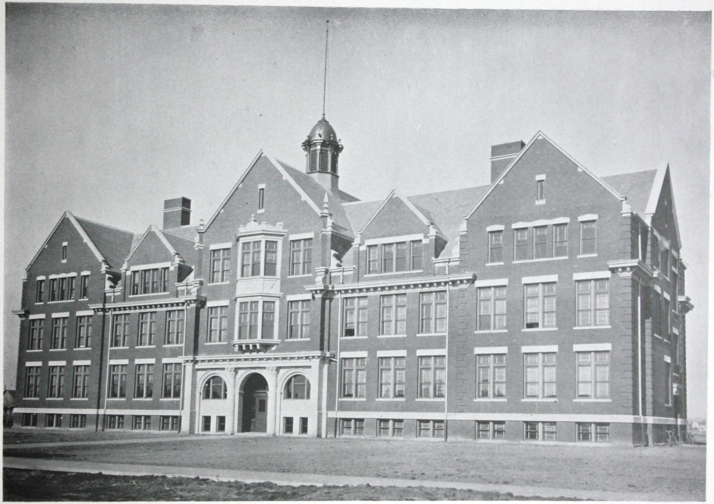


SAUNDERS SCHOOL, OMAHA, NEB.

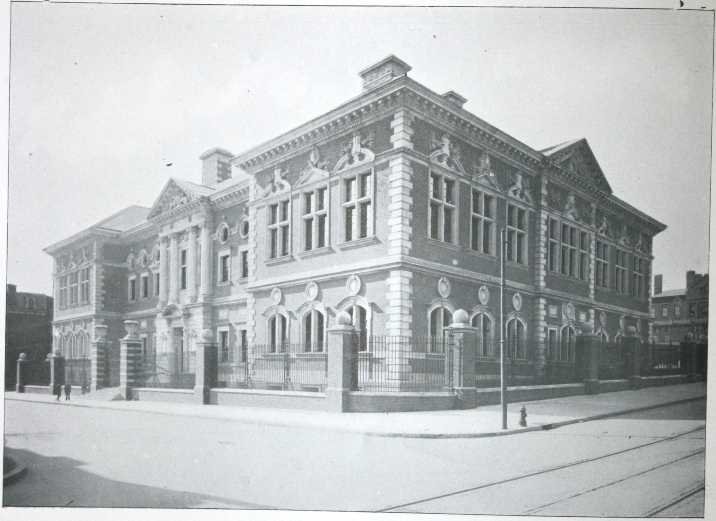
JNO. LATENSER, ARCHITECT.



HIGH SCHOOL, MANCHESTER, N. H. WM. M. BUTTERFIELD, ARCHITECT

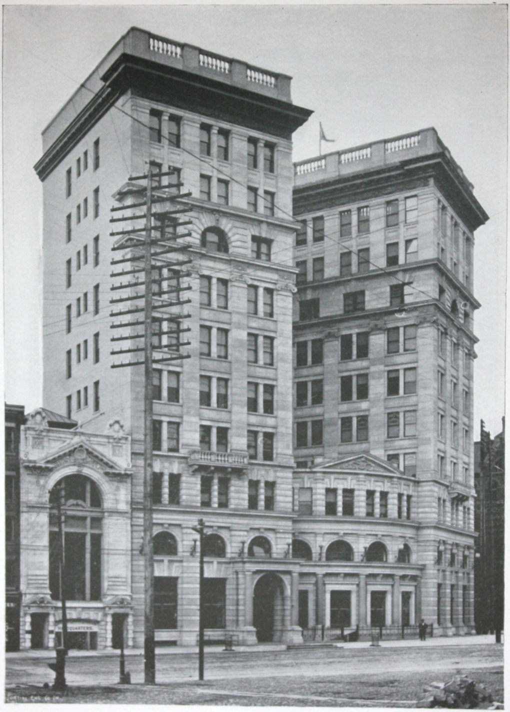


HIGH SCHOOL, WAUSAU WIS. VAN RYN & DEGELLEKE, ARCHITECTS



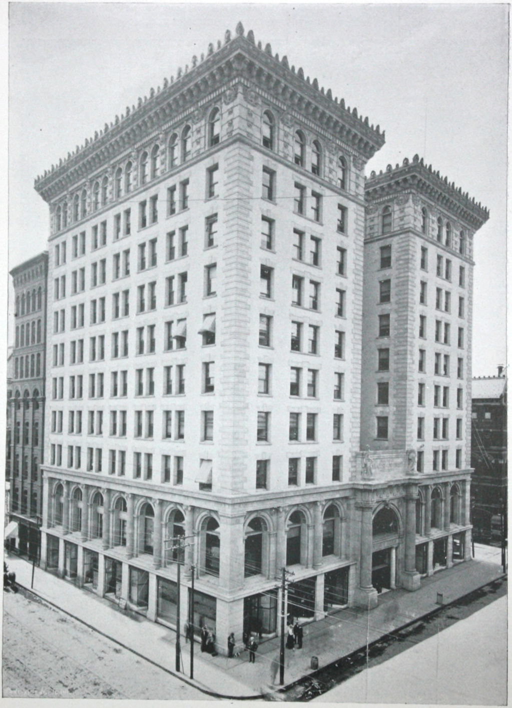
LAW SCHOOL U. OF PA., PHILADELPHIA

COPE & STEWARDSON, ARCHITECTS



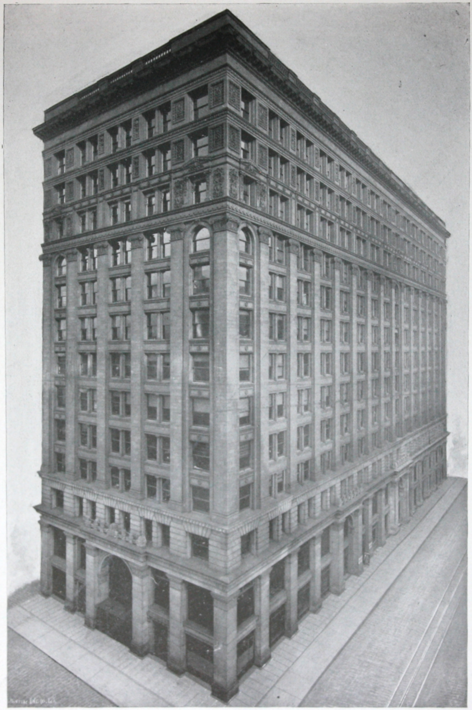
ONANDAGA COUNTY SAVINGS BANK, SYRACUSE, N. Y.

R. W. GIBSON, ARCHITECT



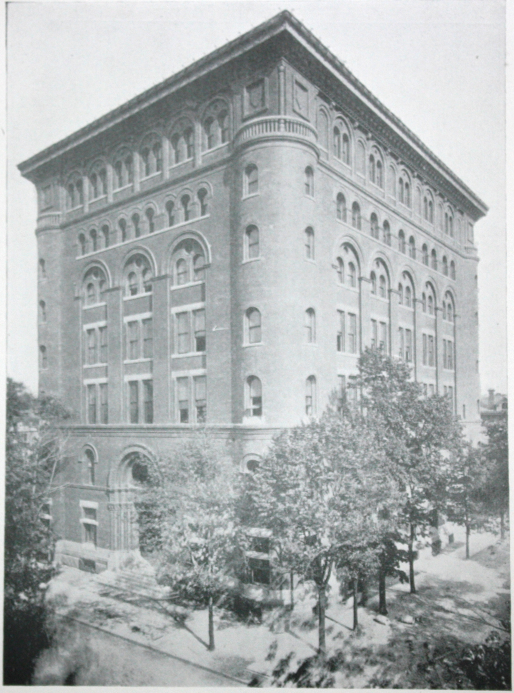
UNIVERSITY BUILDING, SYRACUSE, N. Y.

GREEN & WICKS, ARCHITECTS



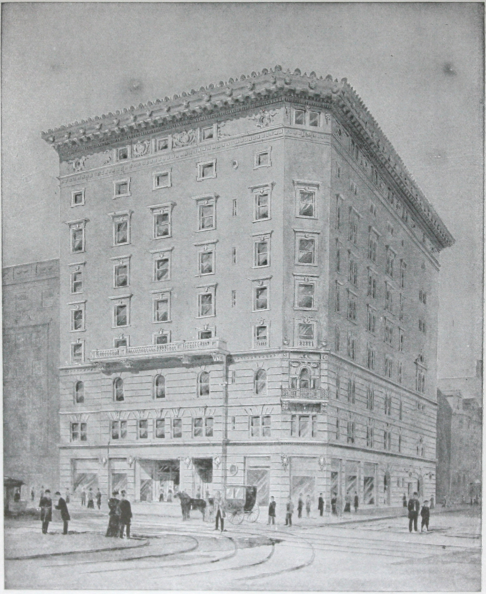
NEW YORK LIFE BUILDING, CHICAGO, ILL.

JENNEY & MUNDIE, ARCHITECTS



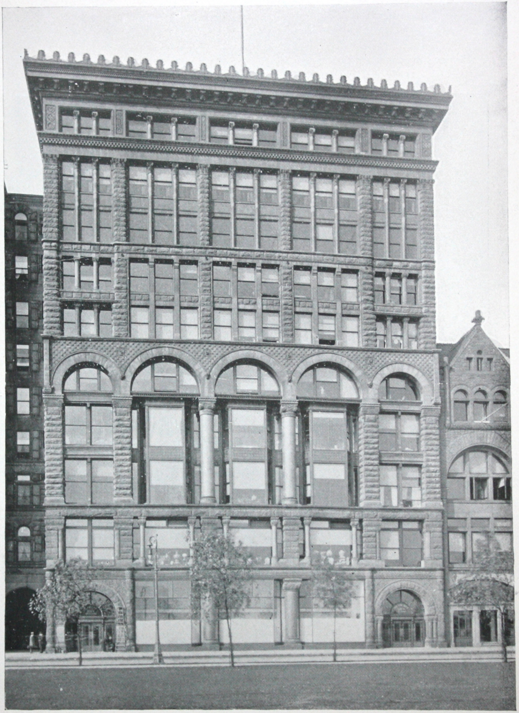
MASONIC TEMPLE, DETROIT, MICH.

Mason & Rice, Architects



MASONIC TEMPLE, BOSTON, MASS.

LORING & PHIPPS, ARCHITECTS



STUDEBAKER BUILDING, CHICAGO, ILL.

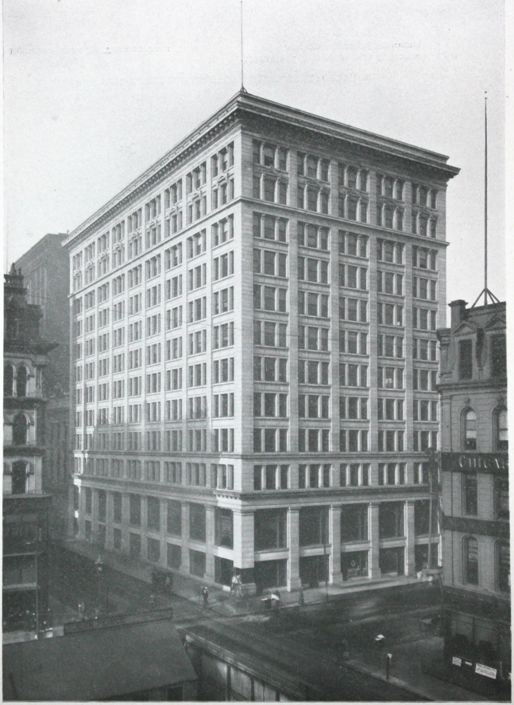
S. S. BEMEN, ARCHITECT

E. A. WRIGHT PHILA.

R. E. TRUST & HALLOWELL BLDG., PHILADELPHIA

Equipped with 525 Thermostats

Edgard V. Seeler and F. C. Roberts & Co.
Architects and Engineers



MERCHANTS' LOAN & TRUST BUILDING, CHICAGO

C. M. WILKS, ENGINEER D. H. BURNHAM & CO., ARCHITECTS